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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/038,500	01/02/2002	David Castiel	10636/005002	6365

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EXAMINER	
DEAN, RAYMOND S	
ART UNIT	**PAPER NUMBER**
2618	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/038,500	CASTIEL ET AL.	
	Examiner	Art Unit	
	Raymond S. Dean	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *October 5, 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7 and 11-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7 and 11-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 July 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1 – 7 and 11 - 13 have been considered but are moot in view of the new ground(s) of rejection.

Porcelli further teaches wherein the first group of satellites is active only when separated by at least 40 degrees from the line of sight of geostationary satellites (Page 2, lines 7 – 11, 20 – 21, Page 3 line 1, Page 31 lines 12 – 18). Cellier further teaches wherein the second group of satellites is active only when separated by at least 40 degrees from the line of sigh of geostationary satellites (Abstract, Col. 5 line 64, an inclination of 40 degrees above the geostationary satellites prevents interference with said geostationary satellites).

Claim Objections

2. Claims 1, 11 are objected to because of the following informalities: The word "geo" in line 15 of Claim 1 should be changed to "geostationary". The phrase "of a plurality of" should be inserted between the word "any" and the word "geostationary" in line 15 of Claim 11. The word "light" should be change to "line" in line 15 of Claim 11. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1 – 4, 6 – 7, and 11 – 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Porcelli et al. (WO 98/51022) in view of Cellier (6,019,318).

Regarding Claim 1, Porcelli teaches a satellite system, comprising: a plurality of satellites in inclined elliptical orbits, each said satellite communicating with a land mass on the Earth (Figure 3A, Figure 3B, Page 10 lines 15 – 21, the satellites will communicate with users and ground stations on the earth), at least a first group of said satellites being in a first set of common orbits having the same, first, repeating ground track communicating with plural specified land mass on the earth (Figure 1C, Figure 3A, Figure 3B, Page 14 lines 14 – 17, Page 15 lines 5 – 11, the ground track covers a plurality of continents), wherein a first portion of said first set of common orbits appears geosynchronous to the earth (Pages: 2 lines 12 – 16, 3 lines 2 – 6, 5 lines 1 – 3, 12 lines 10 – 17, 15 lines 18 – 21, 17 lines 3 – 9, there is a point in the orbits wherein the satellites are at apogee, which is the operational portion of the orbits, during this particular portion the satellites appear to be geostationary and hence geosynchronous to the earth), and a second portion of said first set of common orbits does not appear to be geosynchronous to the earth (Pages: 2 lines 12 – 16, 3 lines 2 – 6, 5 lines 1 – 3, 12

lines 10 – 17, 15 lines 18 – 21, 17 lines 3 – 9, each satellite goes from apogee to perigee thus causing the satellite to speed up which means that the satellite will not appear to be geostationary and hence geosynchronous to the earth), each said satellite communicating during only a portion of the elliptical orbit closest to apogee (Page 12 lines 8 – 14) wherein said first group of satellites is active only when separated by at least 40 degrees from the line of sight of geostationary satellites (Page 2, lines 7 – 11, 20 – 21, Page 3 line 1, Page 31 lines 12 – 18).

Porcelli does not specifically teach a second group of said satellites being in a second set of common orbits having the same, second, repeating ground track, different than said first ground track, wherein a first portion of said second set of common orbits appears to be geosynchronous to the earth, and a second portion of said second set of common orbits does not appear to be geosynchronous to the earth, and communicating with second plural specified land masses on the earth and wherein said second group of satellites are active only when separated by at least 40 degrees from the line of sight of geostationary satellites.

Cellier teaches a second group of said satellites being in a second set of common orbits having the same, second, repeating ground track, different than a first ground track (Figure 6, Column 6 lines 53 – 67, Column 7 lines 1 – 12, there a multiple groups of satellites, each group has an associated ground track, the ground tracks need not be identical thus different from one another), wherein a first portion of said second set of common orbits appears to be geosynchronous to the earth (Column 5 lines 30 – 38, the parameters such as the semi-major axis, inclination, eccentricity, and argument

of perigee can be a plurality of values thus creating a constellation like the constellations of Porcelli rendering a scenario wherein portions of the orbits appear geostationary and thus geosynchronous to the earth) and a second portion of said second set of common orbits does not appear to be geosynchronous to the earth (Column 5 lines 30 – 38, the parameters such as the semi-major axis, inclination, eccentricity, and argument of perigee can be a plurality of values thus creating a constellation like the constellations of Porcelli rendering a scenario wherein each satellite goes from apogee to perigee thus causing the satellite to speed up which means that the satellite will not appear to be geostationary and hence geosynchronous to the earth), and communicating with second plural specified land masses on the earth (Column 7 lines 1 – 4, worldwide coverage comprises plural specified land masses on the earth) and wherein said second group of satellites are active only when separated by at least 40 degrees from the line of sight of geostationary satellites (Abstract, Col. 5 line 64, an inclination of 40 degrees above the geostationary satellites prevents interference with said geostationary satellites).

Porcelli and Cellier both teach a satellite system comprising satellites in geo-stationary, inclined, elliptical orbits with eccentricities of approximately .7 (See Cellier, Column 5 lines 58 – 60) thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the satellite system of Porcelli with the additional groups of satellites of Cellier for the purpose of providing worldwide coverage as taught by Cellier. The Porcelli system can be expanded beyond serving just one particular hemisphere.

Regarding Claim 5, Porcelli teaches a communication system, comprising: a plurality of ground stations, each including communication equipment for communicating with a satellite in orbit (Page 12 lines 18 – 21, Page 13 line 1, the ground stations will communicate with the operational satellite); and a plurality of satellites in respective orbits, said respective orbits including a first sub-constellation orbit with a plurality of satellites (Figure 3A, Figure 3B, Page 10 lines 15 – 21) therein, each of said plurality of satellites following a repeating ground track that repeats an integral number of times each day and each repeating ground track optimized for covering more than one specific land mass on the earth, including a first sub-constellation optimized for covering first land masses (Figure 1C, Figure 3A, Figure 3B, Page 14 lines 14 – 17, Page 15 lines 5 – 11, the ground track covers a plurality of continents) wherein at least one of said orbits of said orbits of the first sub-constellation is virtually geosynchronous for only a portion of the respective orbits (Pages: 2 lines 12 – 16, 3 lines 2 – 6, 5 lines 1 – 3, 12 lines 10 – 17, 15 lines 18 – 21, 17 lines 3 – 9, there is a point in the orbits wherein the satellites are at apogee, which is the operational portion of the orbits, during this particular portion the satellites appear to be geostationary and hence geosynchronous to the earth) and said first sub-constellation of a plurality of satellites are only active when they are at least 40 degrees separated from the line of sight of geostationary satellites (Page 2, lines 7 – 11, 20 – 21, Page 3 line 1, Page 31 lines 12 – 18).

Porcelli does not teach a second sub-constellation optimized for covering second land masses, and a third sub-constellation optimized for covering third land masses,

wherein at least one of said orbits of said all three sub-constellations are virtually geosynchronous for only a portion of each of said respective orbits and all three orbits are distinguished from each other and second sub-constellation of a plurality of satellites are only active when they are at least 40 degrees separated from the line of sight of geostationary satellites.

Cellier teaches a second sub-constellation optimized for covering second land masses and a third sub-constellation optimized for covering third land masses (Figure 6, Column 6 lines 53 – 67, Column 7 lines 1 – 12, there a multiple groups of satellites, each group has an associated ground track, the ground tracks need not be identical thus different from one another, worldwide coverage comprises plural specified land masses on the earth), wherein at least one of said orbits of said all three sub-constellations are virtually geosynchronous for only a portion of each of said respective orbits (Column 5 lines 30 – 38, the parameters such as the semi-major axis, inclination, eccentricity, and argument of perigee can be a plurality of values thus creating a constellation like the constellations of Porcelli rendering a scenario wherein portions of the orbits appear geostationary and thus geosynchronous to the earth) and all three orbits are distinguished from each other (Figure 6, Column 6 lines 53 – 67, Column 7 lines 1 – 12, there a multiple groups of satellites, each group has an associated ground track, the ground tracks need not be identical thus different from one another and thus the orbits need not be identical to one another) and second sub-constellation of a plurality of satellites are only active when they are at least 40 degrees separated from the line of sight of geostationary satellites (Abstract, Col. 5 line 64, an inclination of 40

degrees above the geostationary satellites prevents interference with said geostationary satellites).

Porcelli and Cellier both teach a satellite system comprising satellites in geo-stationary, inclined, elliptical orbits with eccentricities of approximately .7 (See Cellier, Column 5 lines 58 – 60) thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the satellite system of Porcelli with the additional groups of satellites of Cellier for the purpose of providing worldwide coverage as taught by Cellier. The Porcelli system can be expanded beyond serving just one particular hemisphere.

Regarding Claim 11, Porcelli teaches a constellation of satellites, comprising: plurality of satellites in elliptical orbits around the earth with the earth at one focus of the elliptical orbit (Figure 3A, Figure 3B, Page 10 lines 15 – 21), and each elliptical orbit having an apogee and a perigee (Figure 3A, Figure 3B), each said satellite communicating with a portion of the Earth (Page 10 lines 15 – 21, the satellites will communicate with users and ground stations on the earth), at least a first group of said satellites being in common orbits having the same, first, ground track (Figure 3A, Figure 3B, Page 14 lines 14 – 17), wherein each of said satellites is active for only a predetermined portion of its orbiting time, closest to its apogee portion (Page 12 lines 8 – 14), wherein said active predetermined portion is during a period wherein a first portion of said orbits appear to be virtually geosynchronous with the earth (Pages: 2 lines 12 – 16, 3 lines 2 – 6, 5 lines 1 – 3, 12 lines 10 – 17, 15 lines 18 – 21, 17 lines 3 – 9, there is a point in the orbits wherein the satellites are at apogee, which is the

operational portion of the orbits, during this particular portion the satellites appear to be geostationary and hence geosynchronous to the earth), and wherein a second portion of said orbits do not appear to be virtually geosynchronous with the earth (Pages: 2 lines 12 – 16, 3 lines 2 – 6, 5 lines 1 – 3, 12 lines 10 – 17, 15 lines 18 – 21, 17 lines 3 – 9, each satellite goes from apogee to perigee thus causing the satellite to speed up which means that the satellite will not appear to be geostationary and hence geosynchronous to the earth), each said satellite communicating during only a portion of the elliptical orbit closest to apogee (Page 12 lines 8 – 14), and wherein the satellites in said first group are spaced such that when a first satellite in the sub-constellation reaches its inactive portion, another satellite in the sub-constellation becomes active (Page 17 lines 3 – 16) and wherein if any one of said plurality of satellites is active it is at least 40 degrees separated from the line of sight of any of a plurality of geostationary satellites (Page 2, lines 7 – 11, 20 – 21, Page 3 line 1, Page 31 lines 12 – 18).

Porcelli does not teach a second group of said satellites being in common orbits having the same, second, ground track, different than said first ground track, wherein said active predetermined portion is during a period wherein a first portion of said respective orbits appear to be virtually geosynchronous with the earth and wherein a second portion of said respective orbits do not appear to be virtually geosynchronous with the earth.

Cellier teaches a second group of said satellites being in common orbits having the same, second, ground track, different than said first ground track (Figure 6, Column 6 lines 53 – 67, Column 7 lines 1 – 12, there a multiple groups of satellites, each group

has an associated ground track, the ground tracks need not be identical thus different from one another), wherein said active predetermined portion is during a period wherein a first portion of said respective orbits appear to be virtually geosynchronous with the earth (Column 5 lines 30 – 38, the parameters such as the semi-major axis, inclination, eccentricity, and argument of perigee can be a plurality of values thus creating a constellation like the constellations of Porcelli rendering a scenario wherein portions of the orbits appear geostationary and thus geosynchronous to the earth) and wherein a second portion of said respective orbits do not appear to be virtually geosynchronous with the earth (Column 5 lines 30 – 38, the parameters such as the semi-major axis, inclination, eccentricity, and argument of perigee can be a plurality of values thus creating a constellation like the constellations of Porcelli rendering a scenario wherein each satellite goes from apogee to perigee thus causing the satellite to speed up which means that the satellite will not appear to be geostationary and hence geosynchronous to the earth).

Porcelli and Cellier both teach a satellite system comprising satellites in geo-stationary, inclined, elliptical orbits with eccentricities of approximately .7 (See Cellier, Column 5 lines 58 – 60) thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the satellite system of Porcelli with the additional groups of satellites of Cellier for the purpose of providing worldwide coverage as taught by Cellier. The Porcelli system can be expanded beyond serving just one particular hemisphere.

Regarding Claim 2, Porcelli in view of Cellier teaches all of the claimed limitations recited in Claim 1. Porcelli further teaches wherein said only a portion of the orbit closest to apogee is approximately 60% of its total orbiting time (Page 16 lines 19 – 21, Page 17 lines 1 – 2, the orbital time is 12 hours, a three satellite system will have 8 loop hours, which is approximately 60% of said orbital time).

Regarding Claim 3, Porcelli in view of Cellier teaches all of the claimed limitations recited in Claim 1. Porcelli further teaches wherein said first land mass locations represent populated portions on the earth (Figure 1C, the ground track covers a plurality of continents, said continents comprise populated portions on the earth).

Regarding Claim 4, Porcelli in view of Cellier teaches all of the claimed limitations recited in Claim 3. Cellier further teaches a third group of said satellites being in common orbits having the same, third ground track, different than a first and second ground track (Figure 6, Column 6 lines 53 – 67, Column 7 lines 1 – 12, there a multiple groups of satellites, each group has an associated ground track, the ground tracks need not be identical thus different from one another).

Regarding Claims 6, 13, Porcelli in view of Cellier teaches all of the claimed limitations recited in Claims 1, 11. Cellier further teaches wherein the apogee of the satellites are approximately 3/4 the altitude or less of geo stationary satellites (Column 5 lines 30 – 36, the altitude of the orbit is defined by the length of the semi-major axis and the eccentricity, Cellier teaches parameter choices, such as the choices of a semi-major axis and eccentricity, can be made to create a family of orbits. The system designer can thus select different values for the semi-major axis and the eccentricity thus the

altitude can have different values such as approximately ¾ or less of the altitude of geo-stationary satellites).

Regarding Claim 7, Porcelli in view of Cellier teaches all of the claimed limitations recited in Claim 1. Porcelli further teaches wherein each ground track covers three continents (Figure 1C, Page 15 lines 5 – 11).

Regarding Claim 12, Porcelli in view of Cellier teaches all of the claimed limitations recited in Claim 11. Porcelli further teaches wherein a first satellite is descending when it becomes inactive, and another satellite is ascending when it becomes active (Page 5 lines 1 – 9, the operating satellite becomes inactive when it is replaced with the next satellite entering the same region).

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond S. Dean whose telephone number is 571-272-7877. The examiner can normally be reached on Monday-Friday 6:00-2:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward F. Urban can be reached on 571-272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Raymond S. Dean
December 12, 2007

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